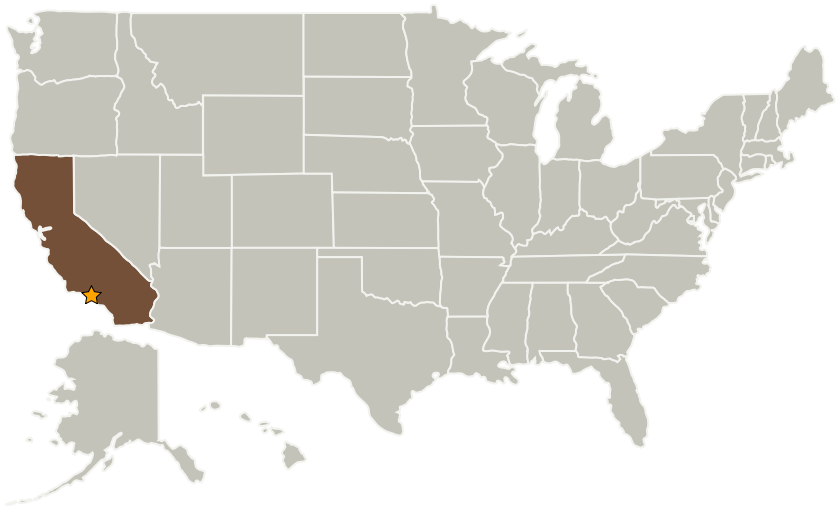
Terrestrial Planet Finder Coronagraph High Accuracy Optical Propagation, Phase I

Completed Technology Project (2004 - 2004)

Project Introduction

The Terrestrial Planet Finder (TPF) project is considering several approaches to discovering planets orbiting stars far from earth and assessing their suitability to support life. One of these approaches is based on a coronagraph design operating in the visible wavelength regime, which requires both very high surface quality, large aperture, telescope optics and advanced optical systems to reject direct, scattered and diffracted starlight that is on the order of 1x109 brighter than the light reflected from the planet. The project has the need for advanced optical modeling and design tools that include physical optical calculations to support propagation results at a contrast level of 1x10-11 at the image plane of the coronagraph. The CODE V software is the most advanced software available for a wide variety of state of the art optical engineering tasks, and would be ideally suited for the TPF project once the proposed capabilities are integrated. Optical Research Associates proposes to extend capabilities of a newly researched method for beam propagation to support the optical system modeling needs of the TPF coronagraph project. The result will be an optical design and analysis tool to provide another means for predicting the performance of this important astronomical asset.

Primary U.S. Work Locations and Key Partners



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Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Jet Propulsion Laboratory (JPL)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Small Business Innovation Research/Small Business Tech Transfer

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Organizations Performing Work	Role	Type	Location
★Jet Propulsion Laboratory(JPL)	Lead Organization	NASA Center	Pasadena, California
Optical Research Associates	Supporting Organization	Industry	Pasadena, California

Primary U.S. Work Locations
California

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Principal Investigator:

Bryan D Stone

Technology Areas

Primary:

- TX12 Materials, Structures, Mechanical Systems, and Manufacturing
  - TX12.4 Manufacturing
    - TX12.4.3 Electronics and Optics Manufacturing Process